THE WALNUT SITUATION, 1948

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PRODUCTION

IN-SHELL SALES

SHELLED SALES

1935   1940   1945   1950   1955

Scope
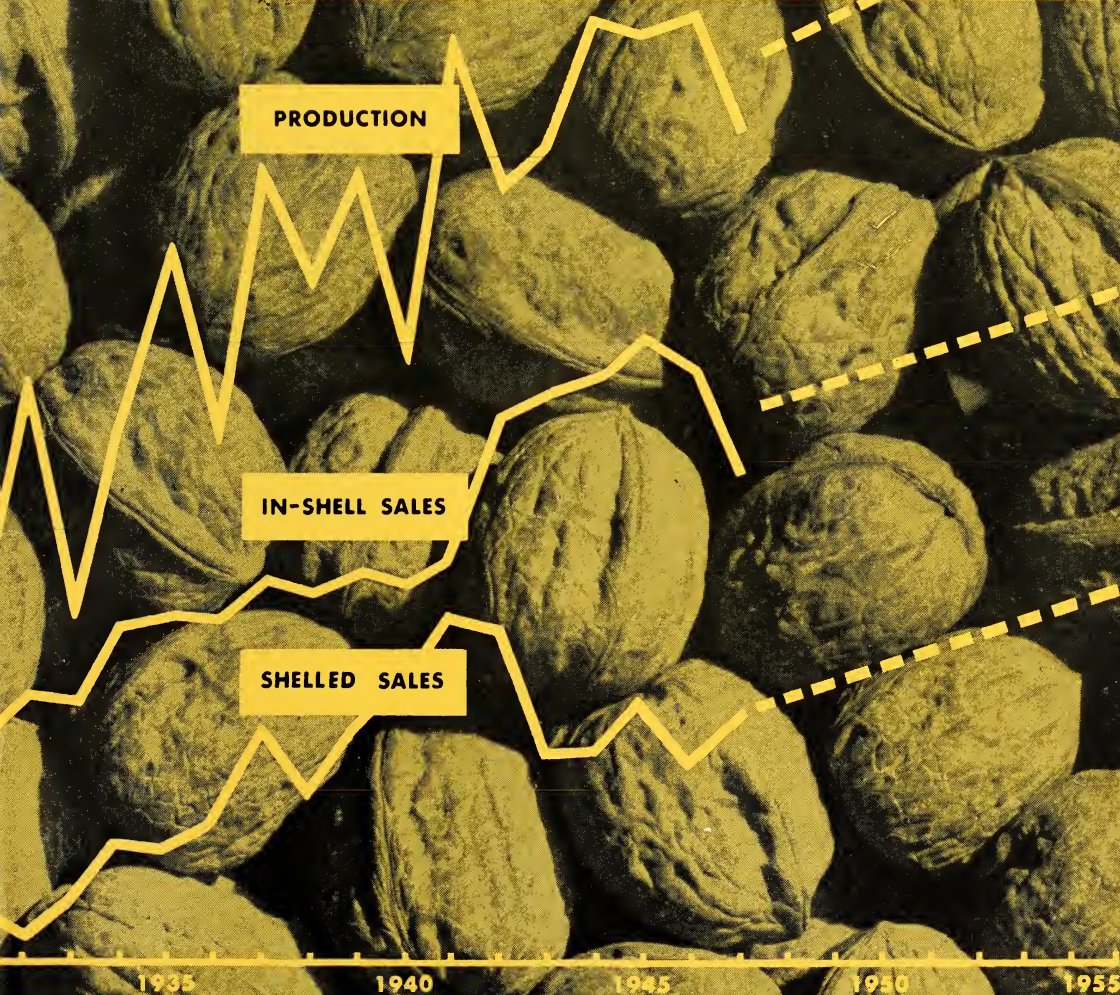
Nation's Walnut Industry Located Entirely on Pacific Coast

Must compete with imported walnuts and other nuts. . . . U. S. production one fifth of world's tree nuts. . . . balance mostly from Mediterranean

THE ENGLISH OR PERSIAN walnut industry in the United States is situated entirely on the Pacific Coast. California produces about 90 per cent of the domestic production and Oregon almost 10 per cent. While Washington produces a few English walnuts, the volume is so small that in this publication California and Oregon production is considered to be the total domestic production.

Domestically produced walnuts must compete not only with imported walnuts but with other domestic and imported tree nuts as well. Domestic production of other tree nuts (pecans, almonds, and filberts) is increasing. Imports of Brazil nuts, cashews, walnuts, almonds, filberts, pistachios, pignolias, etc., offer considerable competition to the domestic walnut producer. Even peanuts which are produced in such large volumes here in the United States might also be considered competitive with walnuts. Walnuts and competitive tree nuts, therefore, are of international importance.

The Mediterranean basin produces about three fifths of the world's production of edible tree nuts. About one fifth is produced in the United States. The other one fifth is produced principally in the Balkans, India, South America, and China (table 1). The Mediterranean countries produce practically all of the pistachios and pignolias and most of the world's almonds and filberts. The United States produces practically all the pecans and over one third of the world's walnuts (table 2), together with some almonds and filberts. Brazil nuts come exclusively from South America. Cashews are pro-

Table 1: TREE NUTS: AVERAGE PRODUCTION IN PRINCIPAL PRODUCING COUNTRIES (1935–1939)

Millions of pounds, shelled equivalent

Country	Production
Italy	104
United States	96
Turkey	72
Spain	70
Brazil	42
France	31
India	22
Mozambique	14
Rumania	11
China	9
Portugal	6
Yugoslavia	6
Others	23
Total	506

Table 2: WALNUTS: AVERAGE PRODUCTION IN PRINCIPAL PRODUCING COUNTRIES (1935–1939)

Millions of pounds, shelled equivalent

Country	Production
United States	44.4
France	29.9
Italy	12.5
Rumania	11.1
China	9.4
Turkey	6.4
Yugoslavia	5.9
Bulgaria	3.7
Hungary	1.7
Total	125.0

duced in various places but are of commercial importance only in India and Mozambique.

Almonds are the most important tree nut, accounting for 29 per cent of the world production of edible tree nuts. Walnuts are second, accounting for 25 per cent, followed by filberts—21 per cent, Brazil nuts—9 per cent, pecans—7 per cent, cashews—7 per cent, pignolias—1 per cent, and pistachios—1 per cent.

The production of walnuts in the United States for the most part is from cultivated orchards, most of which are irrigated. Walnuts produced in foreign countries are generally grown on small farms, along roads, or interplanted with other crops.

Supply

Total Store of Tree Nuts in U. S. Increasing

Up from 344 million pounds in 1920's to 564 million in 1946 mostly due to more domestic production of walnuts, almonds, pecans, and filberts

Supplies of all tree nuts in the United States have increased from an average of 344 million pounds (unshelled basis) during the 1920's to a peak of 587 million pounds in 1945 and 564 million pounds in 1946 (table 3). Most of the increase in supply has been due to an increase in domestic production of walnuts, almonds, pecans, and filberts. Production of these nuts averaged 127 million pounds during the 1920's and 302 million so far in the 1940's.

Imports of tree nuts have shown no decided trend since World War I. They dropped during the depression and during World War II but have since returned to near record volumes. Prior to 1931, imported tree nuts in volume exceeded domestic production; but since 1931, with the exception of 1936, domestic production of tree nuts has exceeded imports.

While the total supply of edible tree nuts in the United States has increased considerably, the per capita supply until 1944 was not much different than it was after World War I. Per capita supply of tree nuts on a shelled basis was 1.42 pounds in 1946 and 1.45 pounds in 1919. The supply per capita since World War I has varied from .88 pounds in 1933 to 1.45 pounds in 1919 and has averaged 1.21 pounds.

Table 3: UNITED STATES TREE NUT SUPPLIES HAVE MORE THAN DOUBLED (1910–1946)*

10-year averages	United States production†	Imports	Total supply
	1,000 pounds, unshelled basis		
1910–1919	45,517	157,989	203,506
1920–1929	126,825	217,148	343,973
1930–1939	207,852	185,836	393,688
1940–1946‡	302,044	180,927	482,971

* Includes almonds, filberts, pecans, walnuts, Brazils, pignolias, pistachios, chestnuts, cashews, and miscellaneous tree nuts.
† Walnuts, pecans, almonds, and filberts.
‡ 7-year average.

United States supply of walnuts is increasing

Total supplies of walnuts (shelled and in-shell) in the United States dropped from an annual average of over 51 million pounds (shelled basis) in the 1920's to about 37 million pounds during the depression (table 4). Supplies have since increased to over 51 million pounds. Per capita supplies of walnuts have increased since the early 1930's, but still remain below the 1920's.

Table 4: PER CAPITA SUPPLIES DE-CREASED SINCE WORLD WAR I

United States Total and Per Capita Supply of Walnuts

Crop year averages	Total supply	Per capita supply
	1,000 pounds, shelled basis	
1922–1925	51,259	.45
1926–1929	50,453	.42
1930–1933	36,907	.29
1934–1937	41,154	.32
1938–1941	48,412	.37
1942–1944	49,630	.36
1945–1947	51,041	.38

United States supply of in-shell walnuts also bigger

The supply of in-shell walnuts in the United States, as shown in figure 1, is now considerably larger than during the 1930's but not much larger than the supply in the 1920's. During the 1920's imports made up a considerable part of the supply but they have been an insignificant part of the supply since the early 1930's.

Shelled walnut supply now largely domestic production

In recent years, supplies of shelled walnuts, while larger than during the 1930's are lower than in the 1920's (fig. 2). Imports formerly made up the major part of the shelled walnut supply, but domestic production has now come to be the major part of the supply.

Walnut imports may increase with lower tariffs

During the 1920's the United States imported annually about 14 million pounds of in-shell walnuts and about 17 million pounds of shelled walnuts. With the increase in domestic production, increased tariffs, and lower prices during the 1930's, imports dropped to an annual average before the war (1935–1939) of 163,000 pounds of in-shell walnuts and 4,361,000 pounds of shelled walnuts.

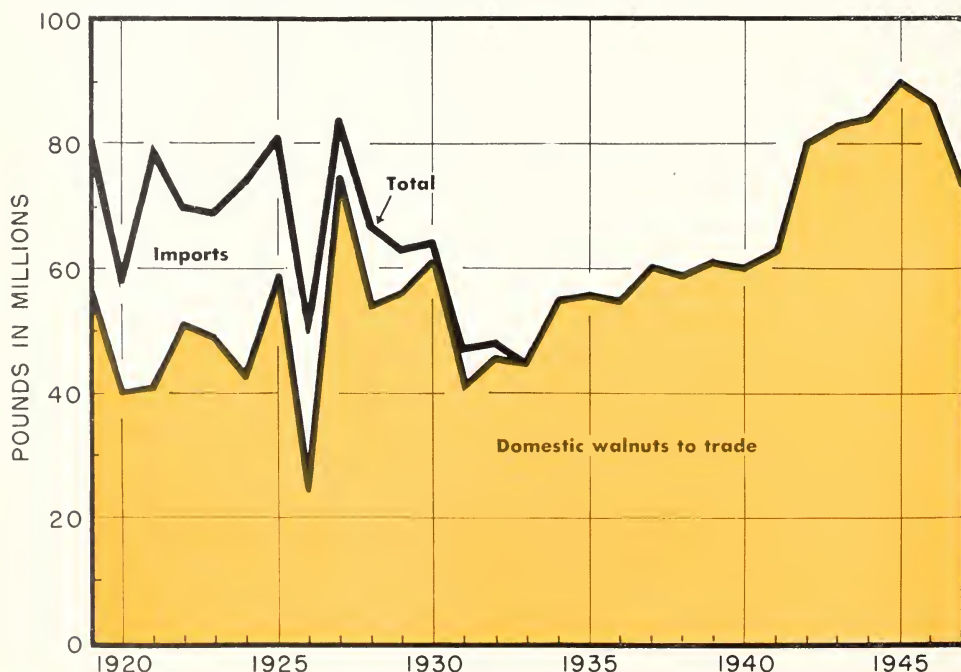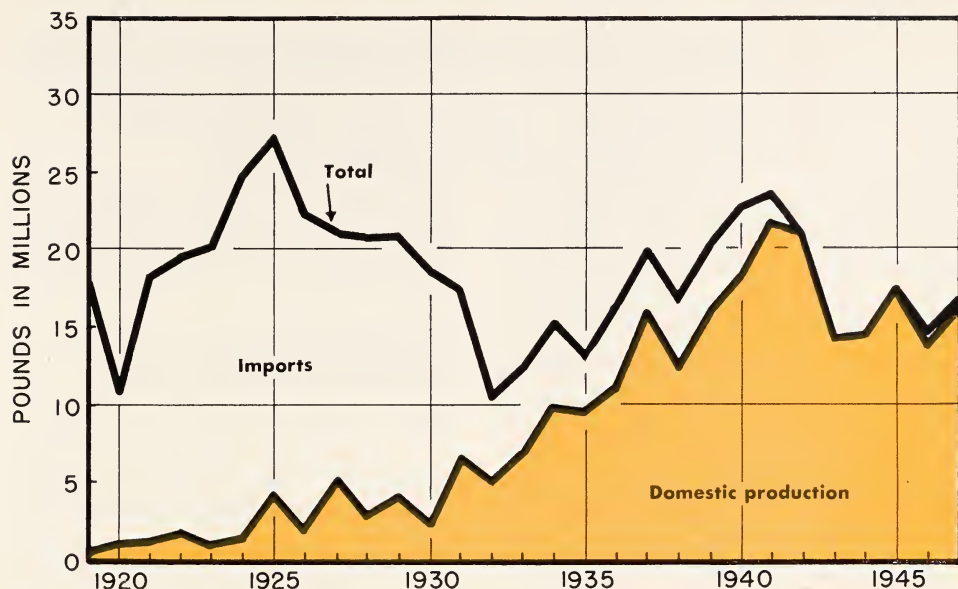### Fig. 1: UNITED STATES SUPPLY OF IN-SHELL WALNUTS

Fig. 2: UNITED STATES SUPPLY OF SHELLED WALNUTS

Tariffs set in 1930 were 5 cents per pound on in-shell walnuts and 15 cents per pound on shelled walnuts. The Geneva trade negotiations in 1947 reduced the shelled walnut tariff to 7½ cents (the full amount of reduction permitted under the Reciprocal Tariff Agreement Act) on a quota of 5 million pounds per year. Imports in excess of 5 million pounds will be subject to the higher rate of 15 cents per pound.

The importation of in-shell walnuts into the United States is under more handicap than the importation of shelled walnuts. A tariff of 5 cents per pound on in-shell walnuts is, under normal prices, a considerable part of the full value. Furthermore, the high standards established by the domestic industry and their well-established advertised brands make the importation of in-shell walnuts an unattractive undertaking. It would appear that imports of in-shell walnuts will not be a significant factor in the domestic market. However, more competition from imported shelled walnuts appears likely when satisfactory supplies are available. A tariff of 7½ cents is, under current prices, a relatively small amount of the full value of a pound of shelled walnuts. Furthermore, because of the great amount of hand labor involved in shelling, costs in foreign countries are considered to be much lower than those prevailing in the United States. Also the shelled market, especially the manufacturing trade, is very price sensitive and no doubt willing to take foreign shelled walnuts if prices are attractive. The competition, therefore, that can be expected from foreign walnuts will be from the shelled walnut importations.

While importations of walnuts in the past have been made from a great many Mediterranean and Balkan countries, France and China in the prewar period of the 1930's were the most important sources of imported walnuts. Future importations from China appear doubtful so long as internal warfare in north China continues. Increased exports from the Mediterranean basin, particularly France. and possibly Italy and Turkey, can be expected when conditions appear favorable and when available supplies are of suitable grade and quality.

Acreage

Walnuts Planted Under Wide Range of Conditions

Grown with other crops, along roadsides, on hills, in irrigated soils.... California has 5,000 acres of Black walnuts—potential English walnuts

Walnut acreage is somewhat different from acreage of other trees. In the first place, walnuts take a very long time to reach maturity and are, therefore, frequently interplanted with other trees or crops. They are also used extensively as border plantings along roadsides. English walnuts are grafted onto Black walnuts, and it is estimated there are currently in California about 5,000 acres of Black walnuts in orchard position which are potentially English walnut acreages.

Walnuts are also planted under a rather wide range of conditions—from hillsides to irrigated deep soils. In most cases trees are planted on either 50 or 60 feet intervals. Additional walnut trees may be used as interplants; or prune, almond or peach trees are frequently used as intercrops to be removed later as the walnut trees need the entire space.

United States bearing acreage of walnuts continues steady

While the bearing acreage of walnuts in the United States continues to increase slightly, the 1946 acreage of 138,600 is only 6,000 acres larger than ten years previous in 1937, which is less than 0.5 per cent increase per year. About 83 per cent of the bearing acreage is in California and 17 per cent in Oregon. Acreage in Oregon and California is not expected to increase significantly (fig. 3).

Fig. 3: UNITED STATES BEARING ACREAGE CHANGED LITTLE IN RECENT YEARS
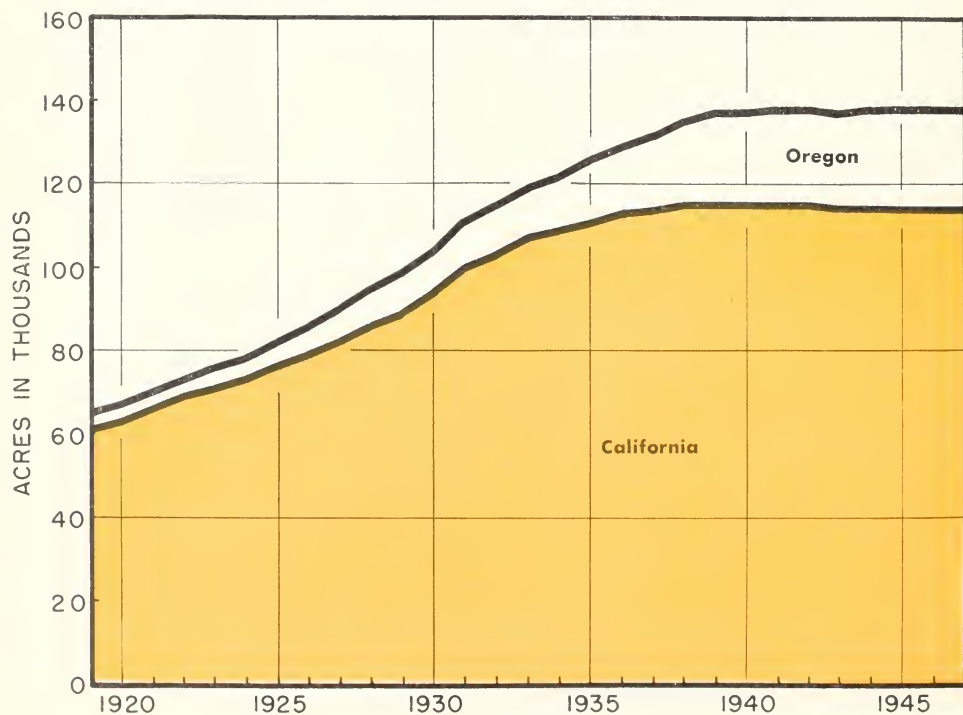
California walnut acreage also remains steady

The total walnut acreage in California reached a peak of almost 140,000 acres in the early 1930's (fig. 4). It declined to about 125,000 acres in the early 1940's and since has remained almost constant. No significant change in total walnut acreage is anticipated in the immediate future. Plantings were heavy in the 1920's when nonbearing acreage reached a peak of 47,000 acres. Nonbearing acreage, as a measure of new plantings, declined during the thirties and has remained about 10,000 acres during the 1940's.

Northern California acreage up, southern acreage down

Bearing walnut acreage in southern California has declined from 73,000 acres in 1937 to 54,000 in 1947, while bearing acreage in northern California increased from 45,000 acres in 1937 to over 59,000 in 1947. Furthermore, nonbearing acreage is increasing in northern California and decreasing in southern California (fig. 5).

With more tree removals anticipated in southern California because of competition from other more profitable crops, suburban development, and pest infestations, further declines in the commercial bearing acreage of walnuts in southern California appear inevitable. A continuation of increased plantings in northern California will depend upon anticipated returns in comparison to other crops— prunes, grapes, peaches, almonds, etc. At present there does not appear to be much stimulus to further increased plantings of prunes or grapes. It would appear that a moderate increase in plantings of walnuts in northern California could be expected.

California walnut acreage nears maturity; newer plantings mostly late Franquette variety

About one half of the total California walnut acreage is 24 years or older, and

Fig. 4: CALIFORNIA TOTAL ACREAGE STEADY SINCE 1940
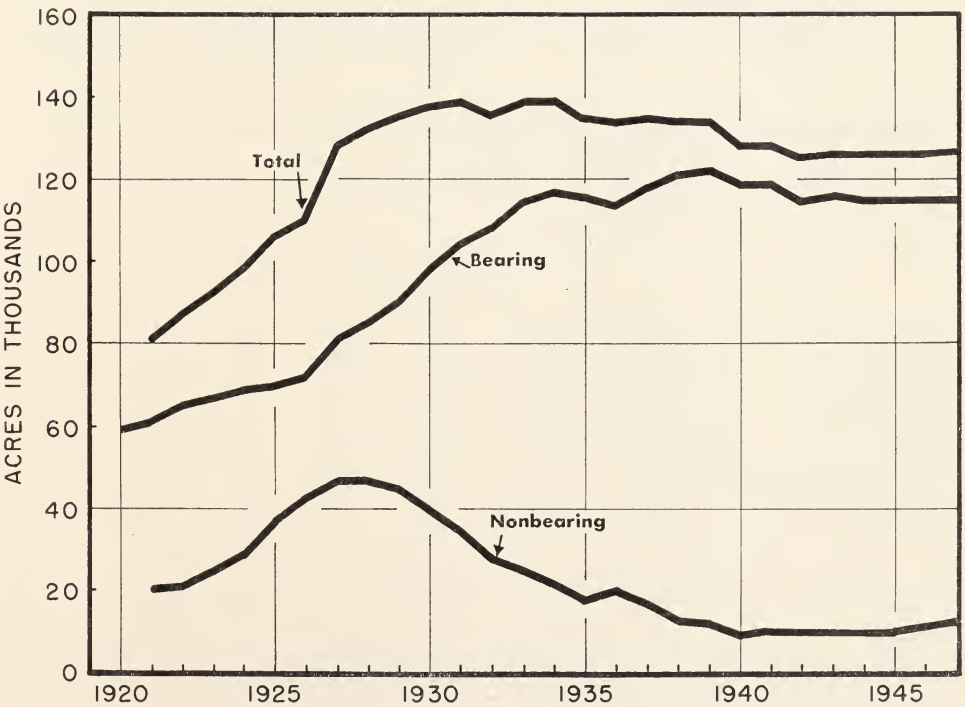
about three fourths are 19 years or older, and about one quarter is less than 18 years of age (table 5). Bearing walnut acreage is not a very precise measure of what the walnut industry might produce because as trees get older they increase greatly in size and productive capacity. While the total walnut acreage of the state might be considered old, the present acreage could still increase in productive capacity by as much as 10 to 15 per cent.

About one third of the present total walnut acreage is of the early-harvesting Placentia and similar varieties, but most of these trees are old and plantings in the last 12 years have been negligible. The proportion of the total acreage in these varieties, planted largely in southern California, is decreasing. One fifth of the acreage is of the late-harvesting Fran-

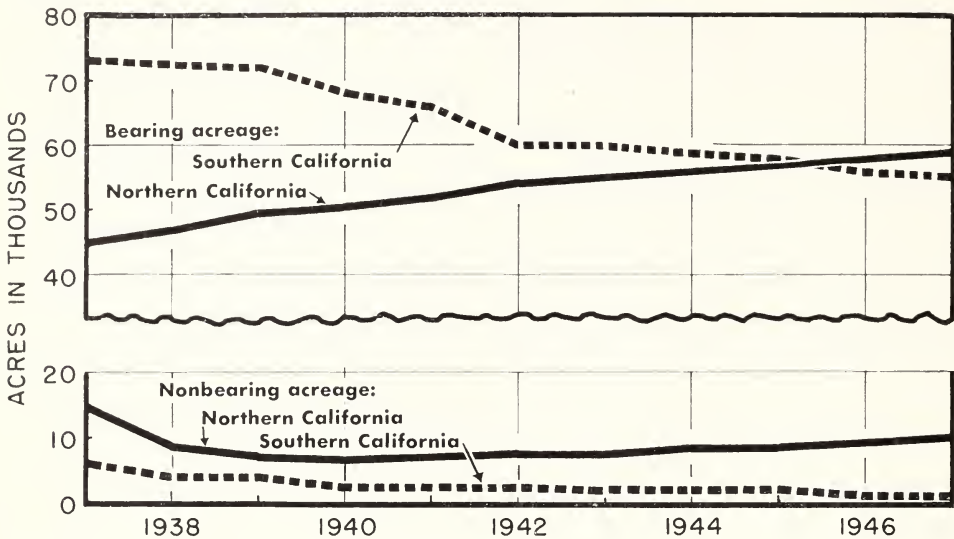**Fig. 5: NORTHERN CALIFORNIA ABOUT MAKES UP SOUTHERN ACREAGE LOSSES**

Table 5: WALNUT ACREAGE IN CALIFORNIA BY AGE OF TREES AND VARIETIES IN 1947

Variety	Total acreage		Acres				
	Acres	Per cent	8 years or less	9–13 years	14–18 years	19–23 years	24 years and over
Concord	7,807	6.2	171	177	894	2,156	4,409
Eureka	13,253	10.5	1,005	629	1,639	3,144	6,836
Franquette	27,156	21.4	7,743	2,994	4,529	5,026	6,864
Mayette	4,682	3.7	364	426	998	857	2,037
Payne	19,376	15.3	3,101	1,783	4,183	5,041	5,268
Placentia and similar	39,366	31.0	666	849	3,724	10,329	23,798
Other varieties	9,164	7.2	1,289	628	1,496	1,627	4,124
Seedlings	5,984	4.7	47	54	246	121	5,516
All walnuts	126,788	100.0	14,386	7,540	17,709	28,301	58,852
Per cent		100.0	11.3	6.0	14.0	22.3	46.4

quette variety, but this acreage is comparatively young. About one half of the plantings in the last ten years has been of this variety. Many of the northern plantings have been Franquettes. The Payne—an early-harvesting variety—is the third most important variety in total acreage. It has been planted extensively in northern districts and has been second only to Franquette in new plantings during the last 17 years.

**Late-harvesting Franquettes
will not make early markets**

It is apparent from table 5 that the increased plantings of Franquettes will result in an increasing proportion of the crop being harvested late. This may cause some concern in the marketing of walnuts as early markets are important. As pointed out (p. 13), 90 per cent of the distribution of in-shell walnuts by packers is made before Christmas. The markets must be supplied in late October and early November if a large amount is to be moved during the year. The period between Thanksgiving and Christmas is most important, but a part of the annual movement must be made earlier in order to move large annual amounts. Of course, late varieties could be stored for the early fall market of the following year but that involves storage expense and waiting for returns. Usually more than half of the Concords, Placentias, and Paynes can be placed in eastern markets in time for Thanksgiving, while only about 5 per cent of the Franquettes and about 15 to 20 per cent of the Eurekas and Mayettes make these early markets.

Production

United States Walnut Output Is Likely to Continue Upward

Average annual tonnage jumped from 25,000 in 1920's to almost 70,000 in 1940's.... it may reach 80,000 in ten years

Production during recent years averaged almost 70,000 tons as compared with 25,000 in the early 1920's (table 6). While walnuts are not markedly alternate bearing, there are fluctuations in production from year to year. Production of walnuts in any one year is considered to be a result of weather conditions rather than anything inherent in the trees. Greatest variation in annual production was from 1926 when the crop was very small, 16,200 tons, to 52,100 in 1927 when all weather factors were favorable to a large production. In spite of increasing acreage, the 1927 crop was not equalled again until 1935. While currently crops of 70,000 tons are considered average, it would be possible for the crop to vary from 50,000 to 85,000 tons. Production is increasing, and crops approaching 75,000

Table 6: UNITED STATES PRODUCTION HAS INCREASED FOR DECADES— TREND MAY CONTINUE

United States Walnut Production (tons—orchard run)

Averages	California	Oregon	United States
1920–1924	25,080	380	25,460
1925–1929	34,040	1,090	35,130
1930–1934	36,720	2,220	38,940
1935–1939	52,740	3,940	56,680
1940–1944	58,100	5,420	63,520
1945–1947	62,000	7,200	69,200

tons might possibly be considered average in five years and 80,000 tons, in ten years. If more than usual amounts of acreages are pulled in the meantime, these volumes would not be reached.

California's tonnage rose from 31,000 to 60,000; may reach 70,000 in ten years

California walnut production has increased from an average of 31,000 tons orchard run in the 1920's to 45,000 tons in the 1930's and 60,000 tons so far in the 1940's. It is estimated that California production in the early 1950's could average about 65,000, and around 70,000 during the late 1950's. Oregon walnut production, which now averages about 7,000 to 8,000 tons per year, is also expected to increase. These estimates are made on the basis of present acreage and yields in relation to age and also on the basis of per cent of full crop as reported by the Crop Reporting Service. The expected increase will be due to greater yields from more mature trees.

California production moves north, doubles in ten years

In the early 1930's, two thirds of the California walnuts were produced in the area south of the Tehachapi (table 7). During the last ten years, production in southern California declined about one half while northern California production doubled. It is expected that northern California production will continue to increase, based on the increasing bearing acreage and the greater yields that will come with increasing age of plantings. Production in southern California is expected to decline even further because of tree removals. The increasing suburban development in southern California is also an important factor in removing considerable walnut production from commercial channels.

Table 7: CALIFORNIA'S PRODUCTION GROWS IN THE NORTH, DECREASES IN THE SOUTH

Production of Merchantable Walnuts, Northern and Southern California

Averages	Southern California		Northern California	
	Bags	Per cent	Bags	Per cent
1930–1934................	399,992	71.1	162,368	28.9
1935–1939................	487,076	60.5	318,398	39.5
1940–1944................	385,630	46.0	452,979	54.0
1945–1946................	290,015	30.4	664,370	69.6

Table 8: MOST HIGH QUALITY WALNUTS GROW IN COASTAL AREA

Per cent of Merchantable Walnuts in Crop, 1942 to 1946

Year	Southern California (south of Ventura County)	Ventura and Santa Barbara counties	Coast counties (north of Ventura County)	Sacramento and San Joaquin valleys	State total
1942...............	74.6	83.9	87.6	84.5	73
1943...............	69.4	75.3	88.0	87.6	73
1944...............	55.8	77.3	81.1	83.9	67
1945...............	67.1	87.2	91.4	86.4	76
1946...............	65.6	81.4	90.4	86.6	79
Average...........	66.5	81.0	87.7	85.8	74

Source of data: California Walnut Growers Association (correspondence).

Per cent of crop merchantable greatest in coastal area

The per cent of the crop that is merchantable—which means walnuts high enough in kernel quality after processing to be salable in-shell—is shown by districts in table 8 for the years 1942 through 1946. Southern California (south of Ventura) is consistently the lowest of all districts, averaging about two thirds merchantable. Central and north coast counties are usually considered the areas of highest quality production, but the central valleys and Ventura and Santa Barbara counties produce crops almost as high in merchantability.

Utilization

Bulk of Crop Delivered to Packers or to Local Buyers

Control program allocates supply to in-shell and diversionary (shelled and export) markets

Very little of the domestic walnut crop is used on farms or sold by producers to consumers or retailers. The bulk of the crop after being hulled and dried on the farm is delivered to local buyers or local coöperative packing plants. These local plants remove by air suction the blows and by hand the culls which are sent to shellers.

An allocation of the merchantable supply between the domestic in-shell market and a diversion to shelled and export outlets is made each year by an industry marketing control program operated under government jurisdiction (see p. 16 for a discussion of the control program).

One third of crop is shelled; amount, proportion increasing

Both the amount and the proportion of the crop that is shelled have increased with increasing production (table 9). In recent years roughly one third of the annual production has been shelled. Walnuts to shellers consist of orchard-run walnuts, culls, and merchantable walnuts. The merchantable walnuts are those diverted under the marketing control program and the amount varies from year to year. The amount of culls varies, of course, with the quality of the annual production, but it has averaged around 10,000 tons per year. In recent years about 10,000 tons of orchard-run walnuts have gone direct from farms to shellers.

Table 9: MORE WALNUTS ARE BEING SHELLED AS PRODUCTION INCREASES
Amount and Proportion of United States Walnuts Shelled

Year	Orchard run production	Amount shelled*	Percentage of crop shelled
	tons (unshelled basis)		per cent
1930	30,300	4,100	13.5
1931	34,200	12,100	35.4
1932	49,100	7,800	15.9
1933	34,000	6,500	19.1
1934	47,100	9,300	19.7
1935	57,400	10,500	18.3
1936	45,800	10,700	23.4
1937	62,400	13,800	22.1
1938	55,300	9,400	17.0
1939	62,500	30,250	48.4
1940	50,800	19,100	37.6
1941	70,000	35,290	50.4
1942	61,200	17,580	28.7
1943	63,800	21,305	33.4
1944	71,800	26,910	37.5
1945	70,900	21,360	30.1
1946	71,900	23,640	32.9
1947	64,800	26,700†	41.2

* California only, 1930–1938 inclusive.
† Preliminary estimate.

In-shell selling potential has increased, may reach 900,000 bags in 'fifties

The amount of in-shell walnuts that can be sold to advantage in domestic markets is of great concern to the walnut industry as this form of marketing is more remunerative than the export or shelling outlets. During the 1930's about 600,000 bags appeared to be the saturation point of the domestic in-shell walnut market (table 10). During the war, volumes taken increased to almost 900,000 bags and at prices much higher than the 1930's.

The question then is, has demand changed? The war apparently changed consumption habits considerably. Meat, milk, eggs, some fruits and vegetables are definitely a greater part of the American diet in this postwar period than before the war. How many bags of in-shell walnuts are likely to be sold in the domestic markets in the near future?

The 900,000 bag figure appears to be too high as the absorption of this volume was due to unusual wartime situations in which competing foreign nuts were not generally available. The 600,000 utilization of the 1930's on the other hand appears too low. The population has increased 12 per cent since then; domestic purchasing power is also considerably greater. The market is larger. The postwar period has not settled sufficiently as yet to indicate very clearly the normal amounts that can reasonably be expected to be sold. Industry estimates, however, are in the neighborhood of 800,000 bags, which was the salable amount determined under the market control in 1947. However, the pack fell below estimates, with the result that only about 725,000 bags were sold in-shell. Larger amounts, however, could have been sold had the quality been higher. The movement of this volume in 1947, however, was facilitated by a 20 per cent drop in prices from 1946.

If 800,000 bags are a reasonable absorption of in-shell walnuts in the domestic markets in 1947, what about 1957? If domestic population continues its rate of increase and if our economy is expanding and prosperous, a domestic absorption of 900,000 bags or more of in-shell walnuts would seem reasonable. This estimate is based more on increasing population rather than on increasing greatly the per capita consumption. If something is done to change per capita consumption, obviously the estimate of future in-shell absorption must also be changed. But as pointed out under the discussion of consumption (p. 13), it does not seem reasonably possible in light of past experience to increase per capita consumption significantly in face of the keen competition from other nuts and foods. In spite of the fact that the population increased 21 per cent from 1922-1925 to 1942-1944 and that our national income has increased by 107 per cent, still domestic consumption of tree nuts only increased 13 per cent.

Table 10: HOME MARKET CAN ABSORB MORE IN-SHELL NUTS THAN IN 'THIRTIES

Domestic Absorption of Merchantable In-shell Walnuts
(Absorbed by the wholesale trade)

Crop year	Amount
	100-lb. bags
1933–34	449,654
1934–35	548,421
1935–36	563,024
1936–37	553,253
1937–38	602,569
1938–39	586,935
1939–40	609,645
1940–41	595,232
1941–42	630,286
1942–43	805,093
1943–44	830,787
1944–45	844,402
1945–46	898,768
1946–47	868,515
1947–48 *	725,010

* Preliminary, August through March only.

Exports declined during the war unlikely to recover much

Very little exporting of walnuts was done until the early 1930's when domestic production increased and domestic purchasing power declined greatly. A short walnut crop in Europe in 1933 created an export market for American producers for about 10 million pounds in 1933 and again in 1934. Beginning in 1935, exports were subsidized by the federal government and almost 18 million pounds were exported. This subsidy continued in varying amounts through 1942. All the exports were in-shell walnuts, and in the prewar period 1936–1938, exports amounted to 11 per cent of domestic production and 17 per cent of in-shell walnuts marketed. The United Kingdom and other European countries were the principal outlets.

Exports were reduced to negligible proportions during the war and have not recovered greatly since, nor is it expected that they will be very significant in the near future. Exports for August through February of 1947–48 account for less than 5 per cent of the in-shell walnuts marketed.

Consumption

Use of Tree Nuts Up Since War

Consumers buy 72 per cent of in-shell walnuts before Christmas; shelled walnuts less dependent on season, one half purchased by food manufacturers

The consumption of tree nuts did not change greatly from 1922 to 1945 (table 11). Since the war, however, because of increased imports (principally almonds, cashews, and Brazil nuts), the consumption increased about one third. Walnuts continue to be the most important tree nut in terms of volumes consumed, but almonds and cashews are increasing in relative importance, and pecans are second only to walnuts in volumes consumed.

Consumption and movement of walnuts highly seasonal

In-shell walnuts are sold principally during the fall and winter holiday season. A survey of consumer purchases at retail stores showed that 72 per cent of the consumers' annual purchases of walnuts were made during the quarterly period, October through December, and only 28 per cent were made during the balance of the year, January through September. Over 90 per cent of the pack is sold by packers to the trade during the quarter, October through December.

Because of the seasonal demand for in-shell walnuts, it is necessary to "hurry" the harvesting, packing, and shipments in order to supply the early demand. In years past when most of the production was in the South and of early-maturing varieties, no large problem of meeting early markets was involved. However, much of the northern plantings are of late-harvesting varieties, which are difficult to place in early markets. Walnut producers should give this early market and maturity problem consideration because it is possible that should the production of late varieties increase too much, price differentials in favor of early-maturing varieties may be created.

Seasonal demand for shelled walnuts is less marked. Movement is dependent on production of shelled walnuts. About one half the shelled walnuts are purchased by food manufacturers. A prewar survey indicates 45 per cent went to bakeries, 35 per cent to confectioneries, 5 per cent to ice-cream manufacturers, and 15 per cent to other outlets.

Marketing

California Walnut Growers Association Markets 85 Per Cent of Crop

Association grades, blends, shells nuts in own seven-acre plant in Los Angeles; California supplies 90 per cent of nation's walnuts

The marketing of walnuts is one of the most highly organized by producers of any agricultural commodity. About 90 per cent of the national production is in California, of which about 85 per cent is marketed by the California Walnut Growers Association. This association was organized in 1912 and today consists of 25 local associations, which receive and grade members' deliveries of walnuts. Practically all walnuts received by local associations are shipped to the California Walnut Growers Association's large seven-acre plant in Los Angeles where they are further graded and blended to meet trade requirements. Surplus and cull walnuts are shelled in a modern shelling plant owned and operated by the association. The producers through their association are able to control the quality of in-shell walnuts they offer to the trade, which are about 80 per cent of the domestic offerings. Trade names are registered. Diamond brand is the best grade and individual walnuts are stamped with the Diamond brand. Rather extensive advertising costing normally about ½ cent per pound is concentrated

Table 11: TREE NUT CONSUMPTION JUMPED SINCE WAR'S END; WALNUTS LEAD

Estimated Annual United States Consumption of Tree Nuts and Peanuts

	1922–1925	1926–1929	1930–1933	1934–1937	1938–1941	1942–1944	1945–1946
Total consumption (1,000 pounds)							
Walnuts	51,259	50,453	36,907	41,154	48,412	49,630	53,929
Pecans	16,278	25,043	28,740	33,688	40,246	45,023	43,573
Filberts	11,350	9,689	5,797	4,878	5,007	8,993	16,269
Brazil nuts	20,057	14,374	14,660	17,765	22,843	423	18,436
Almonds	30,537	29,586	19,733	18,418	13,750	30,189	41,804
Cashews	*	*	10,835	23,258	29,404	13,548	28,870
Other tree nuts	2,274	7,034	2,123	2,425	1,861	608	2,704
Total tree nuts	131,755	136,179	118,795	141,586	161,523	148,414	205,585
Peanuts†	356,700	442,000	452,060	514,170	586,520	862,000	755,000
Consumption per capita (pounds)							
Walnuts	0.45	0.42	0.29	0.32	0.37	0.36	0.38
Tree nuts total	1.16	1.14	0.95	1.11	1.22	1.08	1.46
Peanuts†	3.15	3.69	3.62	4.02	4.44	6.28	5.38

* Included with other nuts.
† Includes peanuts used for butter but excludes those used for oil.

on Diamond grade. Second grade is Emerald and third grade, Suntand.

Walnuts are graded by size and quality

As walnuts are received at local packing plants, the blows (shriveled meats) are removed by air suction and the culls (other defects) are removed by hand. The remaining so-called merchantable walnuts are size graded (Large, Medium, Baby sizes) and the shells cleansed. The quality grade of each lot is determined by shelling a sample and determining the percentage of sound and of light-colored kernels. Walnuts are sold to the trade on the basis of size and quality.

Expanded sales expected from new consumer packages

In-shell walnuts have been offered to the trade, by packers, usually in 100-pound burlap bags. Except where wholesalers repackaged in smaller containers, retailers also received the 100-pound bag. Considerable progress has already been made in packing in one-pound cellophane bags, 50 to a carton. This should encourage wider distribution after the holidays, especially in small stores where a 100-pound bag of walnuts may be too large to stock. Consumer and retailer preference for prepackaged foods may increase consumption of in-shell walnuts.

Market control program tries to get greatest farm returns

The walnut industry, including commercial packers, growers, and coöperatives, controls the volume of in-shell walnuts marketed in the domestic market. This control, together with mandatory grade pack specifications of in-shell walnuts, operating under federal and state marketing agreements and orders is one of the oldest and most successful marketing

Table 12: PERCENTAGE OF DIVERSION HAS BEEN SMALL IN RECENT YEARS
Proportion of Walnut Production Diverted from Domestic In-shell Market

	Estimated per cent of diversion from domestic in-shell market	Utilization of walnuts diverted from domestic in-shell market		
		Total	For shelling	Export
	per cent		100-lb. bags	
1933–34	30	215,450	66,510	148,940
1934–35	30	224,170	100,110	124,060
1935–36	30	253,720	119,480	134,240
1936–37	25*	163,600	95,450	68,150
1937–38	35	320,720	184,950	135,770
1938–39	20	175,530	96,320	79,210
1939–40	35	310,930	271,360	39,570
1940–41	15	111,200	88,380	22,820
1941–42	35	351,270	338,670	12,600
1942–43	10	74,720	74,680	40
1943–44	10	86,870	86,870	. . . . .
1944–45	10	87,910	87,910	. . . . .
1945–46	10	97,670	97,670	. . . . .
1946–47	10	91,620	91,620	. . . . .
1947–48	20	103,062†	102,217†	845†

* Does not apply to Oregon-Washington because of short crop.
† Through March 31, 1948.

control programs. The Walnut Control Board represents all factors of the industry and is the agency of the Secretary of Agriculture and the California State Director of Agriculture in administering the provisions of these agreements and orders. Each year the Walnut Control Board, on the basis of experience and available economic and market information, determines the allocation of the supply of merchantable walnuts between the in-shell market and the shelled market so that the greatest total farm returns may be realized. The percentage of the merchantable pack to be sold in the in-shell market is recommended to the Secretary of Agriculture and the California State Director of Agriculture, who may or may not take the recommendation in establishing the volume or percentage that can legally be sold in the domestic in-shell market. The surplus is either shelled or exported.

Ordinarily much greater prices are obtained from the in-shell market than from the shelled market. During the war, however, when imports of competing nuts were negligible, prices were equal—in other words, the shelled market was as remunerative as the in-shell market. During the war, a War Food Order designated an amount to be shelled in order to maintain those industries dependent upon a supply of shelled walnuts. Table 12 shows the amount of the pack each year that has been diverted from the domestic in-shell markets and the utilization that has been made of those diversions.

What the control program tries to do; a two-price market is created for different outlets

As pointed out above, the control program attempts to divide the total amount produced between the shelled market and the in-shell market so that greatest total returns will be realized. An increase in total returns through a controlled allocation of supplies between the in-shell outlet and the shelling outlet is only possible because (1) the two outlets are somewhat independent, that is, customers will not readily shift because of price changes from taking in-shell walnuts, which are largely a holiday item, to taking shelled walnuts, which results in a two-price market, and (2) given percentage changes in supplies in two markets affect their prices by different percentage amounts.

An example will illustrate how the industry decides what division of the crop will bring the greatest returns (maximize returns). Suppose that the industry has a million-bag pack of merchantable walnuts. Suppose further that it is calculated that the following amounts could be sold in the in-shell market at the following prices:

600,000 bags at 22c lb.	=	$13,200,000
700,000 bags at 20c lb.	=	14,000,000
800,000 bags at 18c lb.	=	14,400,000
900,000 bags at 16c lb.	=	14,400,000
1,000,000 bags at 14c lb.	=	14,000,000

And suppose the following amounts could be diverted for shelling at the following equivalent in-shell prices and returns:

100,000 bags at 10c lb.	=	$1,000,000
200,000 bags at 9c lb.	=	1,800,000
300,000 bags at 8c lb.	=	2,400,000
400,000 bags at 7c lb.	=	2,800,000

Then the following diversions between the domestic in-shell market and the diversionary outlets would make the following total returns:

				Total
600,000 bags in-shell = $13,200,000	+ 400,000 bags shelled	= $2,800,000		$16,000,000
700,000 bags in-shell = 14,000,000	+ 300,000 bags shelled	= 2,400,000		16,400,000
800,000 bags in-shell = 14,400,000	+ 200,000 bags shelled	= 1,800,000		16,200,000
900,000 bags in-shell = 14,400,000	+ 100,000 bags shelled	= 1,000,000		15,400,000
1,000,000 bags in-shell = 14,000,000				14,000,000

These figures are merely hypothetical but they illustrate that with the assumed prices the industry would receive greatest returns when 700,000 bags were for the in-shell market and 300,000 bags diverted to shelling. Of course, the situation would change with changing prices and volumes. Also it should be obvious that the industry does not know in advance precisely how much it could possibly sell in the two outlets at each price.

The above illustration points out that the program attempts to maximize returns from *both* markets. In the illustration maximum returns from the in-shell market alone are at 800,000 or 900,000 bags—but taking total returns from both outlets, they are maximized at 700,000 to the in-shell market and 300,000 to the shelled market.

In effect, the program makes a two-price market by control of supply in the different outlets. Without control, prices in different outlets would, of course, tend to be the same. During the period 1933 to 1942, returns from the diversion outlets of 8¾ cents per pound were about 40 per cent less than from the in-shell markets.

From the consumers' standpoint, the program does not affect the total supplies of walnuts available to them. The program only controls the volume of in-shell walnuts offered to the trade so that consumers will be willing to pay the most for a given total quantity of walnuts.

Prices

Farm Prices of Walnuts Ranged from 8¾c in 1932 to 28½c in 1946
Producers are paid on basis of size and kernel quality, not on basis of variety.... farm prices depend on sensitive wholesale prices

Farm prices for walnuts in California have ranged from 8¾ cents a pound in 1932 to 28½ cents in 1946. During the 1920's, farm prices averaged 18½ cents a pound, 11 cents during the 1930's and 20 cents for the period 1940–1946 (table 13). At the present time, varieties are of no consequence with respect to farm prices as producers are paid not on a basis of variety but on a basis of size and kernel quality only. A few very large-sized varieties which are marketed separately do receive premium prices. However, their volume is so small that they are not considered in the commercial crop.

Farm prices are, of course, directly related to wholesale prices as the bulk of the crop is sold by growers through their coöperatives to the wholesale trade. Wholesale prices respond quickly to changes in market conditions. Retail prices are said to be "sticky" because they tend to remain more steady and do not change so often as do wholesale prices.

Parity prices for walnuts are mentioned here because the diversion control program cannot operate when actual farm prices reach parity, nor is it likely that any subsidies will be forthcoming if actual prices are anywhere near parity prices. That is so because government policy has been to try to bring farm prices up to parity but not over parity. The parity price of walnuts is that price which allows the producer to buy the same volume of "things farmers buy" with the price of a pound of walnuts as he could during the base period (1919–1929). Parity prices, therefore, will go up or down with the costs of the things farmers buy. Farm prices for walnuts have been considerably below parity except for the years 1930 and 1943 through 1946 (table 13).

No assurance of diversion payments to walnut industry

While federal law commits the government to support prices of many farm products, the government is not bound by law to support the price of any tree nut. While the government is not legally bound to support the farm prices of walnuts, the government has the permissive right to do so, which is optional with the Secretary of Agriculture. The industry during the crop years 1935–36 to 1942–43, as shown in table 14, did receive funds from the government representing subsidies on diversions to shelling and exports in connection with the marketing control pro-gram. These payments, however, were not made with the intention of maintaining farm prices at any announced level as under the price support programs. While it is possible that future diversion payments may be made to the walnut industry, there is no assurance that they will be paid; or, if so, how much. If farm prices of walnuts would appear to average over 90 per cent of parity, the possibility of government subsidy would appear to be remote.

Walnut prices have to compete with prices of other tree nuts

Of the tree nuts produced in the United States (pecans, walnuts, almonds, and fil-

Table 13: FARM PRICES HAVE BEEN BELOW PARITY,* EXCEPT IN 1930 AND 1943

Farm Prices and Parity Prices of Walnuts

Crop year October–September	California farm price	California and Oregon farm price	Parity price	Per cent U.S. farm price is of parity price
	cents per pound			per cent
Base period 1919–1929 average	....	21.22	21.22	100
1929–30	16.00	16.05	19.75	81
1930–31	20.50	20.50	17.40	117
1931–32	10.95	11.15	14.85	75
1932–33	8.75	8.95	13.80	65
1933–34	11.10	11.20	15.90	70
1934–35	9.35	9.55	16.75	57
1935–36	10.05	10.15	16.10	63
1936–37	10.80	10.85	17.40	62
1937–38	9.00	9.05	16.55	55
1938–39	11.00	11.05	15.90	69
1939–40	8.40	8.40	16.15	52
1940–41	11.65	11.50	16.75	69
1941–42	12.65	12.60	19.50	65
1942–43	15.40	15.35	21.65	71
1943–44	24.15	23.90	23.15	103
1944–45	22.30	22.30	23.75	94
1945–46	25.70	25.45	25.70	99
1946–47	28.50	27.70	31.40	88
1947–48	18.20	17.90	34.59	52

* Parity is a purchasing value. The parity price of walnuts is that price which allows the producer to buy the same volume of "things farmers buy" with the price of a pound of walnuts as he could during the base period (1919–1929).

Table 14: INDUSTRY RECEIVED GOVERNMENT SUBSIDIES BETWEEN 1935 AND 1942

Export and Diversion Payments Received from "Section 32" Funds and Distributed by Board

Crop year	Pounds diverted *	Funds received	Rate— cents per pound
1935–36.....................	25,102,900	$1,249,414	4.98
1936–37.....................	16,333,000	1,040,807	6.37
1937–38.....................	32,015,300	1,408,672	4.40
1938–39.....................	16,350,800	839,436	5.13
1939–40.....................	31,073,900	1,201,806	3.87
1940–41.....................	11,101,500	416,306	3.75
1941–42.....................	33,333,300	1,250,000	3.75
1942–43.....................	7,466,700	276,974	3.71
Total...................	172,777,400	$7,683,415	4.45
Average................	21,597,175	$ 960,427	4.45

* Diverted subject to export and diversion programs.

berts) only pecan prices seem to move regularly in sympathy with walnut prices. Pecans are considered much more competitive with walnuts than are the other domestic tree nuts. But walnuts must also compete with imported tree nuts, principally Brazil nuts and cashews. In the in-shell market walnuts must compete with other tree nuts—pecans, Brazils, almonds, etc. This competition perhaps is most severe in the mixed nut trade where proportions are changed promptly with costs. In the shelled market, manufacturers likewise will make shifts in the utilization of different tree nuts when prices change.

What determines walnut prices?

Walnut prices are, of course, determined basically by supply and demand. The marketing control program attempts to increase returns by affecting supplies and prices in the various outlets, and advertising programs attempt to raise prices by affecting demand. Both of these programs no doubt have raised farm prices, although it is impossible to measure exactly their effects. In addition, government subsidies have also increased farm prices.

Supply is made up of (a) domestic production, (b) imports, and (c) carryover. Domestic production does vary and is an important factor affecting prices from year to year. For example, in 1927 even with increasing purchasing power, prices dropped $150 per ton, from $480 per ton on the extremely short 1926 crop to $330 on the very heavy crop of 1927. Imports are less important than they were formerly, but with the war over they may be more important in the future than they have been for the last ten years. Carryover is considered to be a rather important factor. The industry feels that a large carryover in the hands of the trade is more price-depressing than an increase in production of the same size as the carryover.

Demand consists of (a) the consumers' desire for walnuts coupled with (b) purchasing power to buy. Since 1930 domestic purchasing power has been the most important factor determining the level of farm prices for walnuts, and doubtless will continue to be. When domestic purchasing power changes, other things remaining equal, walnut prices can also be expected to change. Many things affect

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the consumers' desire for walnuts, such as the season, changes in ideas of diets, the quality of walnuts offered for sale, and the quality and volume of competing nuts available, etc.

While consumer demand in relation to supply determines retail prices, there is another factor which is quite important in determining the level of farm and wholesale prices and that is trade demand. Trade demand is not for consumption but for resale. The trade when purchasing walnuts must attempt to estimate what consumers will pay for walnuts. Sometimes they make mistakes. Trade demand is very sensitive to price and market changes. Prospects of advancing prices stimulate trade demand, while an increase in size of carryover, as in 1947, dampens demand.

It is apparent that no single factor alone determines farm prices for walnuts. In any season there are usually several prominent factors affecting walnut prices. Sometimes most of them may be (a) operating in the same direction to lower prices or (b) at other times in the opposite direction to raise prices, or (c) they may be operating in different directions so that their effects on prices are neutralized. Examples of such situations are as follows: (1) In the early 1930's increasing production coincided with sharp declines in purchasing power and prices fell drastically. (2) During World War II purchasing power increased greatly at the same time competing foreign nuts were not generally available and prices rose sharply. (3) Price factors tended to offset one another in 1947, when record purchasing power and a modest-sized crop, both price-raising factors, were more than offset by a very large carryover, increased volume of competing nuts, and average poor quality of the 1947 walnut production.

What about future walnut prices?

To project prices into the future means first to appraise the factors that will be responsible. This much may be said of them in a general way: Supplies of walnuts should increase from domestic production and perhaps from increased imports. Supplies of competing nuts, both domestic and foreign, will also increase. So from the supply side, prices will be depressed. The demand side of the picture is less definite. Increasing domestic population should mean that more walnuts will be demanded and will offset at least in part the expected increase in walnut production; but the most indefinite factor and the most important over a period of time will be the level of purchasing power. If purchasing power falls and if commodity prices in general fall, it seems clear that walnut prices will also drop. In the light of past experience it does not seem possible by any program to persuade consumers to keep on spending the same total amount for walnuts when their incomes fall. This does not mean that marketing control programs and advertising programs are not worthwhile in bolstering prices. They may be very worthwhile in terms of expenditures, but cannot take the place of adequate purchasing power.